

Charotar University of Science and Technology [CHARUSAT]

Chandubhai S. Patel Institute of Technology [CSPIT]

Department of Computer Science & Engineering

Question Bank

Subject code	:	OCCSE4002	Semester	:	7th	Academic Year	:	2025-26
Subject name	:	Social Network Analysis						

NPTEL Week 1 to 12		
1.	Define a network and explain its importance in real-world systems.	[5]
2.	Differentiate between a graph and a network with suitable examples.	[5]
3.	Explain the major components of a network: nodes and edges.	[5]
4.	Explain how centrality measures help in understanding real-world networks.	[5]
5.	Describe how network measures can be used in social network analysis.	[5]
6.	What is clustering coefficient? Explain its role in network structure analysis.	[5]
7.	Differentiate between small-world and scale-free networks.	[5]
8.	Discuss the impact of randomness and preferential attachment in network formation.	[5]
9.	Describe the main assumptions of random and preferential attachment models.	[5]
10.	Explain the working principle of the PageRank algorithm.	[5]
11.	Compare the PageRank and HITS algorithms.	[5]
12.	What are the challenges faced in large-scale link analysis?	[5]
13.	List and describe commonly used graph visualization tools.	[5]
14.	What is community detection? Why is it significant in networks?	[5]
15.	Explain the working of the Girvan–Newman algorithm.	[5]
16.	Compare label propagation and modularity-based methods.	[5]
17.	Discuss applications of community detection in social networks.	[5]
18.	Discuss how community detection helps in analyzing real-world networks.	[5]
19.	Discuss real-world applications of link prediction.	[5]
20.	Compare similarity-based and probabilistic approaches to link prediction.	[5]
21.	What are the main challenges in link prediction for dynamic networks?	[5]
22.	Describe the Independent Cascade Model and its applications.	[5]
23.	Discuss real-world examples of cascade effects in social media or marketing.	[5]
24.	Differentiate between structural and temporal anomalies.	[5]
25.	What are the challenges of anomaly detection in large-scale networks?	[5]
26.	Explain why anomaly detection is important for maintaining network integrity.	[5]

27.	Describe the DeepWalk algorithm and its significance.	[5]
28.	Explain the key challenges in applying deep learning to graphs.	[5]
29.	Compare Node2Vec and DeepWalk algorithms in terms of methodology and performance.	[5]
30.	Describe the role of Graph Neural Networks (GNNs) in representation learning.	[5]
31.	Explain how network theory is applied in healthcare and bioinformatics.	[5]
32.	Summarize the major learning outcomes of the course on network science.	[5]
33.	What are the current challenges and trends in network research?	[5]

Prepared By:	Prof. Hemang Thakar	Date:	16/10/2025
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